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Arnold Schwarzenegger
Governor

June 4, 2010

Ms. Kathy Harder (*sent by email to kharder@waterboards.ca.gov*)
Central Valley Regional Water Quality Control Board
11020 Sun Center Dr., Suite 200
Rancho Cordova, CA 95670-6114

Subject: Comments on "Issue Paper - Aquatic Life and Wildlife Preservation Related Issues - Proposed NPDES Permit Renewal for Sacramento Regional County Sanitation District Sacramento Regional Wastewater Treatment Plant"

Dear Ms. Harder:

San Francisco Bay Regional Water Board staff have reviewed the Issue Paper and offer the following comments:

We believe that the **current** discharge from the Sacramento Regional Wastewater Treatment Plant (SRWTP) discharge may be impairing the aquatic life beneficial use in Suisun Bay, and possibly upstream, by having a detrimental effect on primary productivity and phytoplankton species composition. SRWTP is the largest publicly-owned treatment plant in the Delta and is estimated to contribute up to 90% of the annual ammonia load to the Sacramento River (Jassby 2008). Several monitoring, modeling and isotope studies tracking ammonia from SRWTP to Suisun Bay have recently been conducted. Although these results have not been finalized, preliminary results indicate that ammonia discharged from SRWTP has transformed the downstream Delta from a nitrate- to an ammonia-dominated system, and that it is the main source of ammonia to Suisun Bay (presentations at 2009 Ammonia Summit).

One of the primary hypotheses for the pelagic organism decline (POD) is a decline in food availability for POD species. Declines in diatom blooms in Suisun Bay have been well documented by the Interagency Ecological Program (IEP) and others. Studies on the relationship between nutrients and primary productivity in the estuary indicate that ammonia levels in Suisun Bay reduce both nitrate uptake and primary production rates (Wilkerson et al 2006, Dugdale et al 2007). Since, in general, diatoms are more sensitive to elevated levels of ammonia than other phytoplankton species, this nutrient regime may encourage the growth of less nutritious or harmful algae blooms. An increase in flagellates and cyanobacteria has been documented in the Delta. However, this increase was not accompanied by an increase in zooplankton or pelagic fish species (Lehman 2010, Brown 2010). A recent paper (Glibert 2010) shows significant correlations between the form and concentration of nutrients discharged from SRWTP, nutrient concentrations and form in Suisun Bay, changes in phytoplankton and zooplankton assemblages in Suisun Bay, and the decline of POD species, including the threatened delta smelt.



We recognize that multiple interacting stressors, including ammonium, flow, turbidity, diversions, salinity, habitat, contaminants and introduced species may be influencing the POD. However, as noted, based on the above results, we believe that SRWTP's current discharge may be impairing the aquatic life beneficial use in Suisun Bay. The Issue Paper states, "(t)he removal of ammonia is both technically feasible and commonly employed by most dischargers in the Central Valley Region." Due to the potential effect of SRWTP's current discharge on primary production in the northern estuary, and the fact that the discharge is to a drinking water source, we believe that all reasonable and feasible measures should be taken to reduce ammonia loads as quickly as possible. At the discharge's current level of treatment, we are also concerned about its loadings of copper, pyrethroids and CECs to the estuary.

The Issue Paper states that, "many of the key studies (to answer questions relating to SRWTP's discharge, primary productivity and the POD) are not yet complete and will not be available in time for consideration by the Central Valley Water Board as part of the SRCSD's final permit." We believe that the results from these studies and additional studies, funded by SRCSD, to address the major research needs (especially research topics 1, 2, 4, 7 and 8) outlined by the CALFED expert panel, which was assembled to address this issue (Meyer et al 2009), should be used to inform decisions on the permit. We also suggest that toxicity identification evaluations (TIEs) with native organisms, including diatoms, would be useful in resolving toxicity issues.

A followup meeting is planned in September, possibly with the same CALFED panel. We anticipate that recommendations will come out of this meeting identifying the specific studies that should be conducted to provide greater certainty concerning the role of SRWTP's discharge on primary production in the estuary. We would like to work with Region 5 staff to set up this meeting, in coordination with IEP, to make it useful for decisions on the SRWTP permit.

In conclusion, we urge Region 5 to take all necessary actions to assure that Suisun Bay beneficial uses are fully protected. We look forward to working with Region 5 staff to resolve these important water quality concerns. Please contact Karen Taberski at 510-622-2424 (ktaberski@waterboards.ca.gov) or Dyan Whyte at 510-622-2441 (dwhyte@waterboards.ca.gov) with questions on this topic and to work on setting up the September meeting.

Sincerely,

Bruce H. Wolfe
Executive Officer

Referenced Studies:

Ammonia Summit at the Central Valley Regional Water Quality Control Board. August 18-19, 2009. Foe, C. "Preliminary ammonia results from an ongoing monitoring program." Guerin, M. "Fate and transport modeling of ammonia in the Delta using DSM2."

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Dugdale, R.C., F.P. Wilkerson, V.E. Hogue, and A. Marchi. The role of ammonium and nitrate in spring bloom development in San Francisco Bay. *Estuar. Coast. Shelf Sci.*, **73**: 17-29 (2007).

Glibert, P. Long-term changes in nutrient loading and stoichiometry and their relationships with changes in the food web and dominant pelagic fish species in the San Francisco Estuary. *Reviews in Fisheries Science* (2010) (in press).

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Lehman, P.W., S.J. The, G.L. Boyer, M.L. Nobiga, E. Bass, and C. Hogle. Initial impacts of *Micocystis aeruginosa* blooms on the aquatic food web in the San Francisco Estuary. *Hydrobiologia* 637:229-248 (2010).

Meyer, J.S., P.J. Mulholland, H.W. Paerl and A.K. Ward. A framework for research addressing the role of ammonia/ammonium in the Sacramento-San Joaquin Delta and the San Francisco Bay Estuary Ecosystem. CALFED Science Program (2009).

Wilkerson, F.P. R.C. Dugdale, V.E. Hogue, and A. Marchi. Phytoplankton blooms and nitrogen productivity in the San Francisco Bay. *Estuaries and Coasts* **29**: 401-416 (2006).